

Listing of Claims

1. (Currently Amended) A DC connector, comprising:
an outer shell; and
an inner electrode disposed within the outer shell, the inner electrode having redundant power contacts that are electrically isolated within the same plane, the redundant power contacts being laterally spaced apart equally relative to a central axis, the outer shell and inner electrode being configured for 0/180 degree connection with a second outer shell and second inner electrode of a second DC connector along a mating axis, the outer shell and inner electrode of the DC connector having an axial contact distance with the second outer shell and second inner electrode of the second DC connector of less than 5 mm when fully mated so as to minimize the mating force between the DC connectors, and to allow angled insertion and extraction away from the mating axis during the 0/180 connection with the second DC connector.
2. (Cancelled)
3. (Cancelled)
4. (Currently Amended) The DC connector as recited in claim ~~[[3]]~~ 1 wherein the axial contact distance is between about 3 and about 4 mm.
5. (Currently Amended) The DC connector as recited in claim ~~[[3]]~~ 1 wherein the ~~small~~ axial contact distance is achieved without using locking mechanisms.
6. (Currently Amended) The DC connector as recited in claim ~~[[3]]~~ 1 wherein the ~~small~~ axial contact distance is achieved with a retention mechanism found between the first and second DC connectors.
7. (Original) A DC connector arrangement, comprising:
a DC receptacle comprising:
an outer conductor; and
an inner electrode disposed within the outer conductor
a DC plug for insertion into the DC receptacle, comprising:

an outer conductor that electrically mates with the outer conductor of the DC receptacle; and

an inner electrode disposed within the outer conductor and that electrically mates with the inner electrode of the DC receptacle,

wherein the inner electrodes of both the DC plug and DC receptacle include juxtaposed contacts, the juxtaposed contacts including a center contact and lateral redundant contacts that are equally spaced from the center contact, the center contact of the DC plug being configured to mate with the center contact of the DC receptacle, the lateral redundant contacts of the DC plug being configured to mate with either of the lateral redundant contacts of the inner electrode of the DC receptacle.

8. (Original) The DC connector arrangement as recited in claim 7 wherein each of the contacts includes an upper contact surface and a lower contact surface.

9. (Original) The DC connector arrangement as recited in claim 7 wherein the outer conductive shell of the DC plug fits into the outer conductive shell of the DC receptacle, and wherein the inner electrode of the DC receptacle fits into the inner electrode of the DC plug.

10. (Original) The DC connector arrangement as recited in claim 7 wherein the lateral redundant contacts are configured for transmitting DC current.

11. (Original) The DC connector arrangement as recited in claim 10 wherein the center contact is configured for transmitting data.

12. (Original) The DC connector arrangement as recited in claim 7 wherein the inner electrode of the DC receptacle includes an insulator, the insulator including a plurality of grooves within which the center and lateral contacts reside and wherein the inner electrode of the DC plug includes an insulator, the insulator including a plurality of rails containing the center and lateral contacts

13. (Original) The DC connector arrangement as recited in claim 12 wherein the insulator of the DC receptacle includes an upper groove having an upper contact and a lower groove having a lower contact, the upper lower contacts being electrically connected in order to form one of the contacts, and wherein the insulator of the DC plug includes an upper rail having an upper contact

and a lower rail having a lower contact, the upper and lower contacts being electrically connected in order to form one of the contacts.

14. (Original) The DC connector arrangement as recited in claim 7 wherein the outer conductive shell of the DC receptacle includes a holding flexure, and wherein the outer conductive shell of the DC plug includes a recess for receiving a detent of the holding flexure in order to help secure the DC plug to the DC receptacle

15. (Original) The DC connector arrangement as recited in claim 7 wherein the outer conductive shell of the DC receptacle includes one or more ground flexures for making electrical contact with the outer conductive shell of the DC plug.

16. (Currently Amended) A DC connector arrangement comprising:
a DC receptacle;
a DC plug insertable into the DC receptacle,
a holding detent mechanism located between the DC receptacle and DC plug, the holding detent mechanism minimizing the distance the plug has to travel relative to the receptacle at the friction force required to hold the plug in the receptacle during normal use; and
one or more contact flexures for ensuring electrical contact between the DC receptacle and the DC plug.

17. (Currently Amended) The DC connector arrangement as recited in claim 16 wherein the holding detent mechanism includes a plug side feature and a receptacle feature that are cooperatively positioned so that when the DC plug is inserted into the DC receptacle, the features engage thus securing the DC plug to[[p]] the DC receptacle.

18. (Original) The DC connector arrangement as recited in claim 17 wherein the DC receptacle includes one or more holding flexures, each of the holding flexures including a detent that springs into a corresponding recess of the DC plug.

19. (Original) The DC connector arrangement as recited in claim 16 wherein the holding detent mechanism provides enough holding power to maintain the proper placement of the DC plug within the DC receptacle while still allowing a user to overcome it when inserting and extracting the DC plug to and from the DC receptacle.

20. (Cancelled)
21. (Original) A DC connector assembly, comprising:
a DC receptacle including a receiving element; and
a DC plug including an insertion element that both mechanically and electrically couples to and decouples from the receiving element, the coupling between the insertion element and receiving element allowing DC power transmissions to occur between the DC plug and the DC receptacle, the insertion element being configured for only 0/180 degree insertion into the receiving element while providing the same functionality from both positions, the insertion and receiving elements having a small axial contact distance between about 3 and about 4 mm in order to minimize the insertion extraction force found between the insertion and receiving elements; and
wherein the receiving element includes a plurality of contacts that coincide exactly with a plurality of contacts located on the insertion element, at least a portion of the corresponding contacts being power contacts for allowing DC power transmission to occur between the DC receptacle and DC plug.
22. (New) The DC connector as recited in claim 1 wherein the height of the DC connector is smaller than the width of the DC connector.
23. (New) The DC connector as recited in claim 1 wherein the center contact is configured to transmit identification data associated with determining the DC requirement of an electronic device, wherein the redundant contacts are configured to transmit a driving current, and wherein the outer shell is configured to transmit a return current.
24. (New) The DC connector as recited in claim 1 wherein the outer shell is formed from two conductive layers, and wherein the seams for each layer are placed in an opposed relationship to provide greater rigidity to the outer shell.

25. (New) The DC connector arrangement as recited in claim 15 wherein the outer conductive shell of the DC receptacle includes a pair ground flexures at the top of the outer conductive shell and a pair of ground flexures at the bottom of the outer conductive shell.

26. (New) The DC connector arrangement as recited in claim 16 wherein the holding detent mechanism includes a pair of holding flexures in an opposed relationship on the sides of the DC receptacle and a pair of recesses in an opposed relationship on the sides of the DC plug, the holding flexures having detents that are configured to spring into the recesses when the DC plug is mated with the DC receptacle in order to help secure the DC plug to the DC receptacle, and wherein the DC receptacle includes a first pair of contact flexures on the top of the DC receptacle and a second pair of contact flexures on the bottom of the DC receptacle, the first and second pairs of contact flexures being in opposed relationship.

27. (New) The DC connector arrangement as recited in claim 16 wherein the DC receptacle comprises:

an outer conductor; and

an inner electrode disposed within the outer conductor,

and wherein the DC plug comprises:

an outer conductor that electrically mates with the outer conductor of the DC receptacle; and

an inner electrode disposed within the outer conductor and that electrically mates with the inner electrode of the DC receptacle,

and wherein the inner electrodes of both the DC plug and DC receptacle include juxtaposed contacts, the juxtaposed contacts including a center contact and lateral redundant contacts that are equally spaced from the center contact, the center contact of the DC plug being configured to mate with the center contact of the DC receptacle, the lateral redundant contacts of the DC plug being configured to mate with either of the lateral redundant contacts of the inner electrode of the DC receptacle.